

FIRST RECORD OF THE GENUS *LEPTOCYBE* spp. AS EUCALYPTUS GALL WASP, (HYMENOPTERA: EULOPHIDAE) IN EGYPT

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ABSTRACT

The Eucalyptus gall wasp, *Leptocybe* spp. was detected and recorded for the first time in Menoufia governorate, Egypt in 2013. *Leptocybe* spp. attacks the Eucalyptus trees (*Eucalyptus citriodora* and *E. rostrata*) specially the young plantations and lays their eggs inside the tissues of leave surface, leaf midribs, petioles and young branches composing a large number of small galls on them, causing leaf falling, stunt growth and degeneration of the infested trees.

KEYWORDS: *Leptocybe* spp., Eulophidae, First Record, Egypt

INTRODUCTION

Eucalyptus trees in Egypt are widely planted specially in rural areas. These kinds of trees are greatly used in wood and furniture industry. In addition, it can be used in many products and indirect benefits as extraction of essential oils and eucalyptus extracts from leaves which are highly used as natural products for insect control, safety materials and alternative to pesticides (Abd El-Raheem 2011), furthermore, Eucalyptus extract and its oil can be used in pharmacological medicines composition where they work as antioxidant, antibacterial, antifungal and anticancer (Akin *et al.*, 2010; Ashour 2008; Akin- Osanaiye *et al.*, 2007 and El-Ghorab *et al.*, 2003)

Leptocybe invasa Fisher & la Salle was a new genus and species in Israel that induce galls on several species of eucalyptus trees specially young plantation on the leaves midribs, petioles and stems. *L. invasa* has spread in large areas in the Middle East, the Mediterranean and Africa (Mendel *et al.*, 2004). In 2010 *L. invasa* was found for the first time in Tunisia, it makes galls on young petioles and leaves on Eucalyptus trees (Dhahri and Ben Jamaa 2010). The eucalyptus gall wasp *L. invasa* that causes galls on petioles, leaf midribs and twigs was recorded for the first time in Iraq in 2010 on *Eucalyptus comaldulensis* sapling and trees (Hassan 2012). In Portugal at Alentejo regions the presence of *L. invasa* for the first time was in January 2003, galls were observed on *Eucalyptus comaldulensis*, *E. glubutus* and *E. teraticornis* on leaf midribs and petioles (Branco *et al.*, 2006).

In India, a comparative study has been conducted to estimate the extent of infection caused by gall wasp *L. invasa* to eucalyptus seedling varieties, it was found that there were differences in susceptibility of eucalyptus varieties to infection as seedling from the seed sources Ongole red, Kennedy River, Pudukkottai and Rudrapur were affected by galls, whereas seedling of the sources Sathyavedu appeared resistant (Jacob and Kumar 2009). In Morocco (Garb region), *L. invasa* was detected in 2002 on eucalyptus trees and some studies on it have been followed since 2008 to know its field infestation in eucalyptus plantation (Maatouf and Lumaret 2012). *L. invasa* was recorded as gall forming in Malta in 2012 (Mifsud 2012). In Brazil *L. invasa* has been found in many regions that cultivate the eucalyptus trees (Casta *et al.*, 2008). The gall-making *L. invasa* was discovered in Taiwan on eucalyptus trees in June 2010; distribution and host plant of the wasp were reported (Tung and La sale 2010).

Experimental Procedures

The study was conducted at the Department of Economic Entomology and Agricultural Zoology, Faculty of Agriculture, Menoufia University in 2013.

Leaves and new branches infested by galls (Figure 1a & b & c & d) were collected from different places at El-Menoufia governorate then samples were taken to the laboratory and kept under laboratory conditions ($25 \pm 5^{\circ}\text{C}$ & $60 \pm 5\%$ RH) in small glass cages dedicated to rearing insects open from upper side and covered with a mesh screen, layers of wet cotton were placed in the bottom of the cages in order to preserve moisture of samples for a long time. Once the adults emerged from galls, wasps were collected and sent to Plant Protection Research Institute, Classification Department. Measurements were undertaken using a binocular Wild M38 and Carlzeiss Jena microscope with the aid of Micrometric slide, lens and electronic camera.

RESULTS

The eucalyptus gall wasp *Leptocybe* spp. (Hymenoptera: Eulophidae) is a new invasive genus discovered and recorded for the first time in Egypt in 2013 as a wasp insect on the eucalyptus trees (*Eucalyptus citriodora* and *E. rostrata*).

Through the following up of *Leptocybe* spp. and depending on the previous reviews, it was noticed that adult female lay their eggs inside the tissues of petioles, leaves surface and leaves midribs in new branches of trees. Eggs hatch to tiny larvae which are white to green in color and leg-less, larva lives in small gall formed with plant tissue, every gall contain only one larva which pupated in the same gall (Figure 2a & b).

Wasp galls in high infestation covered most of the leaf surface, the gall diameter reached 0.91-1.0 mm, galls on petioles and midribs were bigger than those in leaf surface and this may be due to united galls with each other (Figure 3a & b & c). The adult wasp exit from the gall through small hole on the top of the gall (Figure 4).

The body of adult wasp is blackish, the eyes are red and the antennae are brown with scape, pedicel and flagellum formed with five segments which are swollen, circular and surrounded by dense hairs. Thorax has a green to blue metallic shiny color. Wings are hyaline, filmy, weak and surrounded by cilia or small hairs. The wings are equal in length; the front one is wider than the hind. The legs are white to yellow with parts in dark color in femur, tibia and last tarsal segment. These dark colors appear more clearly in the hind leg. Female ovipositor has strong structure, the length of adult female ranged 1.05 – 1.5 mm. (Figure 5a & b & c & d & e). Defining the species and doing further studies of the insect will be continued later.

CONCLUSIONS

The Eucalyptus gall wasp, *Leptocybe* spp. was found in many countries in the last few years attacking seedlings and young branches of Eucalyptus trees. The first record of the genus *Leptocybe* spp. was in Menoufia governorate, Egypt in 2013. *Leptocybe* spp. considered one of the most dangerous insects on Eucalyptus trees which cause much harm to them and it can lead to eliminating the infested trees.

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APPENDICES

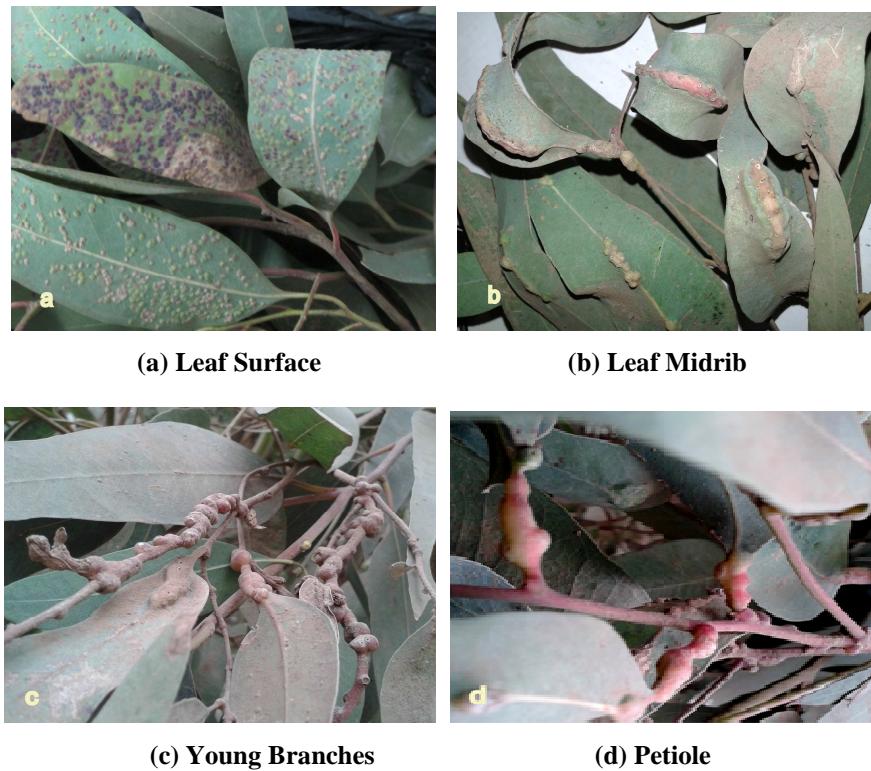


Figure 1: *Leptocybe* Infestation Degrees on Eucalyptus

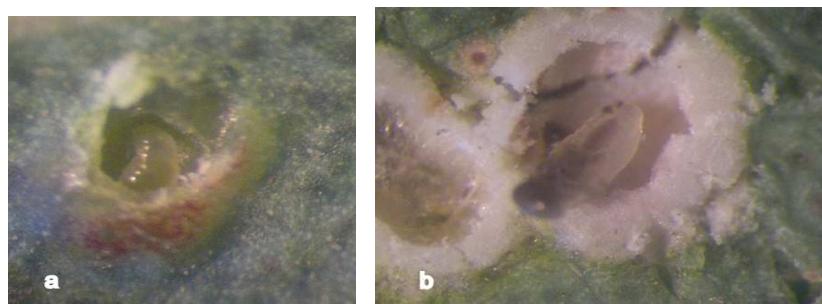


Figure 2: (a) Larva inside Gall (b) Early Pupa inside Gall



a) Leaf and Leaf Midrib

b) Petiole

c) Young Branches

Figure 3: *Leptocybe* Galls on EucalyptusFigure 4: *Leptocybe* Exit Hole(a) *Leptocybe* Dorsal View(b) *Leptocybe* Ventral View(c) *Leptocybe* Antenna(d) *Leptocybe* Wings(e) *Leptocybe* Ovipositor

Figure 5

